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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,907	02/14/2002	Shigeru Katayama	Q68278	4762
7590 01/14/2004 SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC 2100 Pennsylvania Avenue, N.W. Washington, DC 20037			EXAMINER ZACHARIA, RAMSEY E	
			ART UNIT 1773	PAPER NUMBER

DATE MAILED: 01/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/073,907

Applicant(s)

KATAYAMA ET AL.

Examiner

Ramsey Zacharia

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) *filed 11/4/03*
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) *Paper No(s) \_\_\_\_\_*
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 102***

2. Claims 1 and 3-6 rejected under 35 U.S.C. 102(b) as being anticipated by Kazuyoshi (JP 2000-056112).

Kazuyoshi teaches an optical element comprising optical glass that has been modified with a laser having a pulse duration of 1 nanosecond to 1 femtosecond (claim 1). Optical glass is transparent and therefore should have a transmittance in the visible wavelength region of 10% or higher. The optical glass may be optical plastic (claim 5). According to Figure 1, the modified area is in an inner portion of the element, extends in a directed perpendicular to the laser, and has a nearly rectangular section perpendicular to the longitudinal direction of the element.

In the embodiment of Example 1, Kazuyoshi uses a laser having a wavelength of 800 nm and pulse of 0.1 picoseconds,  $1 \times 10^{-13}$  s (paragraph 0013). The energy of this pulse may be calculated as follows:

$$E = (c \times h) / \lambda$$

$$E = (3 \times 10^8 \text{ m/s}) \times (6.6 \times 10^{-34} \text{ Js}) / 800 \times 10^{-9} \text{ m} = 2.5 \times 10^{-19} \text{ J}$$

$$\text{Power} = E / \text{time}$$

$$\text{Power} = 2.5 \times 10^{-19} \text{ J} / 1 \times 10^{-13} \text{ s} = 2.5 \times 10^{-6} \text{ J/s} = 0.0025 \text{ mW}$$

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3. Claims 1, 4, and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Koide (U.S. Patent 6,529,228).

Koide teaches an inkjet recording head that comprises a resinous material that is acted on by a laser (column 2, line 66-column 3, line 9). In Embodiment 1, a laser having a pulse duration of 150 femtoseconds and an energy of 15  $\mu\text{J}/\text{pulse}$  was used (column 8, lines 10-19). The laser operated at 1000 Hz (column 9, lines 1-13), i.e. 1000 pulses per second. At 15  $\mu\text{J}/\text{pulse}$ , this is equivalent to an irradiation energy of  $15000 \mu\text{J}/\text{s} = 15000 \mu\text{W} = 15 \text{ mW}$ . The laser is used to form ports in the resinous material that have a nearly circular cross-section in one direction and a nearly rectangular cross-section in another direction (Figure 4A and 4B). Regarding claim 6, the formation of holes is a form of structural modification of the resinous material that reads on a decomposition reaction.

#### ***Response to Arguments***

4. Applicant's arguments filed 04 November 2003 with respect to the anticipation rejection of Koide have been fully considered but they are not persuasive.

The applicant argues that Koide forms hole by irradiating a resin material from the surface towards the inside. This is contrasted with the present invention wherein the structurally modified part in an inner portion of the plastic object that does not connect to the exterior.

However, it is noted that claims 1, 4, and 5 do not require that the structurally modified part is an inner portion of the object.

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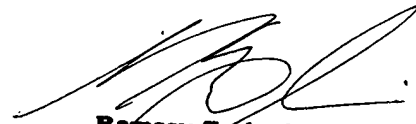
***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518.

The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.



**Ramsey Zacharia**  
**Primary Examiner**  
**Tech Center 1700**